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Missouri Petroleum Storage Tank Insurance Fund  
Review of Liabilities and Loss Projections  
as of June 30, 2009

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Missouri Petroleum Storage Tank Insurance Fund  
Review of Liabilities and Loss Projections  
Performed by: Kerper and Bowron LLC

## 1. Executive Summary

This report makes an actuarial estimate of liabilities at June 30, 2009 of 116,153K for the Missouri Petroleum Storage Tank Insurance Fund. Details of the operation of the fund are noted in Section 4. This would include 67,688K of case reserves and a point estimate of IBNR of 48,465K. With the fund balance at June 30, 2009 at 86,588K, the fund would need an estimated additional 29,565K to close all remaining loss liabilities. This amount does not include settlement expenses.

Projections were also made on the projected equity and a fiscal year cash flow basis from 2010 until 2019. Projections include anticipated revenue from transport load fees and expected expenses and claims payments. Claims payments are projected for both existing claims and new claims reported in the future.

The variance of these forecasts in the outlying years was analyzed and found to be large. This is due to the high amount of loss development on this program, and uncertainty in the future years on the frequency, severity and payout pattern of the fund. We took the additional step of modeling this uncertainty to construct a range around the possible outcomes.

Our simulations show that the range of possible outcomes increases the further into the future we perform projections of fund balances and fund equity:

- The fund balance in 2019 is projected to be approximately \$33 million.
- We would expect that the fund would have a positive cash balance in 2019, but there is a 5% chance that the fund would be out of cash on this date.
- In 2014, there is an 80% chance that the fund balance will be between \$48 million and \$61 million.
- We estimate that the cash balance will decrease each year about \$5.1 million dollars on average over the next 10 years.
- Negative equity in the fund (the excess of liabilities over assets) is currently \$29 million. We project equity will continue to decrease to negative \$58 million by 2019.
- In 2014, there is an 80% chance that the equity in the fund will be between -\$59 million and -\$23 million.
- There is less than a 5% chance the fund will be solvent by 2019 (assets greater than liabilities).

## Loss Projections for Missouri Petroleum Storage Tank Insurance Fund

### 2. Purpose of Study

The purpose of this study is to review the reserves and loss projections for the Missouri Petroleum Storage Tank Insurance Fund. The fund's Board of Trustees contracted with Kerper and Bowron LLC to perform this review. Loss projections have been made for the years 2010 through 2019.

Actuarial data and guidance for this study were provided by both the Board's staff and Williams and Company (the third-party administrator of this program).

### 3. Limitations

Actuarial projections rely on extrapolating past trends to make assumptions about future development and emergence of claims. Since these claims are subject to significant random deviations as well as changes in the legal and regulatory climate, it is possible that the actual results may differ significantly from the projections that have been made.

*Consistency* - The conclusions are predicated on the assumptions that the selected reporting, reserving, and payment patterns, frequency and severity trends, and claim distributions apply, and will continue to apply, to the program. The risk exposure covered by the program as well as the claim management and settlement practices are assumed to be consistent over time, except as noted.

*Entire Document* - The study conclusions are developed in the accompanying text and exhibits, which together comprise the report.

*Data Reliance* - the PSTIF Board of Trustee's staff and Williams and Company provided the data for this study. In the study, we relied on the accuracy and completeness of this data without independent audit. If the data is inaccurate or incomplete, our findings and conclusions may need to be revised.

*Management Reliance* - the PSTIF Board of Trustee's staff and Williams and Company provided information concerning the program structure and risk exposure. In the study, we relied on the accuracy and completeness of this information without independent verification. If the information is inaccurate or incomplete, our findings and conclusions may need to be revised.

*Underlying Assumptions* - In addition to the assumptions stated in the report, numerous other assumptions underlie the calculations and results presented herein.

*Study Foundations* - The study conclusions were based on analysis of the available data and on the estimation of many contingent events. Future costs were developed from the historical claim experience and covered exposure, with adjustments for anticipated changes.

## Loss Projections for Missouri Petroleum Storage Tank Insurance Fund

*Significant Digits* - Numbers in the exhibits are generally shown to more significant digits than their accuracy suggests. This has been done to simplify review of the calculations.

*Interpretation of Conclusions* - Some of the assumptions, methods, and conclusions in this report are of a significantly technical nature. The recipient should understand the assumptions, methodology and possible variability in results that are inherent in our conclusions. We are available to discuss our assumptions, methodology and conclusions in greater detail.

*Assets* - We have assumed that valid assets, which have appropriate maturities and sufficient liquidity to meet the cash flow requirements of the Missouri Petroleum Storage Tank Insurance Fund, support the reserves. We make no guarantee that Missouri Petroleum Storage Tank Insurance Fund funds will prove sufficient.

*Uncertainty* - Due to the uncertainties inherent in the estimation of future costs, it cannot be guaranteed that the estimates set forth in the report will not prove to be inadequate or excessive and actual costs may vary significantly from our estimates.

*Unanticipated Changes* - Unanticipated changes in factors such as judicial decisions, legislative actions, claim consciousness, claim management, claim settlement practices, and economic conditions may significantly alter the conclusions.

*Best Estimate* - These caveats and limitations notwithstanding, the conclusions represent our best estimate of the actuarial status and funding requirements of the program as of the date of this report.

### 4. Terms used in Study

**IBNR.** IBNR stands for claims Incurred But Not Reported. This is the estimated additional amount needed to close all claims currently reported to the fund.

**Loss.** The use of the term loss without modification includes loss and legal costs but does not include unallocated loss adjustment expense (ULAE).

**ULAE.** Unallocated Loss Adjustment Expenses. These are claims settlement expenses. There is no provision in the IBNR for claims settlement provisions. However, the cash flow projections include a provision for these.

**Case Reserves.** These are loss reserves set for individual claims by the adjuster.

**Indicated Loss Reserve.** This is IBNR + Case Reserves. This is the estimated total amount to close all claims at June 30, 2009.

## Loss Projections for Missouri Petroleum Storage Tank Insurance Fund

**Cash Flow Projection.** This is the projected increase or decrease in cash flow during a calendar year. It is the difference between the projected revenue and the projected losses and expenses.

### 5. Background Information (This has been provided by the Missouri Petroleum Tank Insurance Fund)

#### *Notable Events in the Fund's History*

The Petroleum Storage Tank Insurance Fund was established by the Missouri Legislature in 1989, (at the time, it was called the "Underground Storage Tank Insurance Fund"). It was originally housed in the Office of Administration. In 1991, the Missouri General Assembly substantially amended the law governing the Petroleum Storage Tank Insurance Fund. A new revenue mechanism - the "transport load fee" - was established, and responsibility for managing and operating the Petroleum Storage Tank Insurance Fund was transferred to the Department of Natural Resources. Petroleum distributors, licensed by the Department of Revenue, paid the transport load fee. It was a "self-reported fee" paid monthly by these distributors and collected by the Department of Revenue for deposit into the Petroleum Storage Tank Insurance Fund. Collection of the fee began on October 1, 1991.

In 1992, after receiving a report and recommendations from Milliman & Robertson, Inc., the Department of Natural Resources engaged an outside contractor to provide third-party administration services (currently Williams and Company) and began operation of the Petroleum Storage Tank Insurance Fund.

In 1992, the Petroleum Storage Tank Insurance Fund had a single purpose: to insure owners and operators of underground storage tanks which contained petroleum for risks associated with cleanup of spills and leaks, and third-party damages which might result from such spills or leaks.

The first insurance policies were issued by the Department of Natural Resources' third-party administrator in May 1992. "Participation fees" were collected and deposited into the Petroleum Storage Tank Insurance Fund by the third party administrator.

The first claims were filed later in 1992, and the first claim payment was made in June 1993.

The 1996 legislation further expanded the Petroleum Storage Tank Insurance Fund by extending the same two purposes for certain aboveground storage tanks (ASTs). AST owners whose tanks were in service could now apply for and receive insurance coverage,

## Loss Projections for Missouri Petroleum Storage Tank Insurance Fund

and sites where ASTs were out of use by December 31, 1997 could receive benefits for cleanup, if the site was reported to the Department of Natural Resources by that date.

The 1996 legislation, known as Senate Bill 708 (SB708), also established a board of trustees to manage the Petroleum Storage Tank Insurance Fund, effectively moving administration and responsibilities from the Department of Natural Resources to the board of trustees. The board of trustees took over management of the third party administrator contract, employed an Executive Director, and has managed the Petroleum Storage Tank Insurance Fund since.

In 1998, the Legislature significantly changed the way various fees and taxes on petroleum are collected. As part of House Bill 619, the point of payment of the Petroleum Storage Tank Insurance Fund transport load fee was transferred from the petroleum distributor to the petroleum supplier, resulting in fewer payers.

In 2001, the state legislature again amended the law, extending the “sunset date” of the program to December 31, 2010. The legislation (HB453) also gave the Petroleum Storage Tank Insurance Fund board of trustees the authority to raise the transport load fee to a maximum of \$60.00, with no annual increase in excess of \$15.00. The Board subsequently raised the fee from \$25 to \$40 per 8,000 gallons.

In May 2002, the PSTIF began offering an extended reporting period to AST owners/operators who sold their tanks or took them out of service. In May 2004, the PSTIF began offering this same option to underground storage tank owners. Owners may purchase the extended reporting period annually for a period of up to five (5) years after their tanks are sold or closed. Of the 913 PSTIF participants to whom this offer has been made, 449 purchased the extended reporting period for at least one (1) year. Currently there are 373 such endorsements in effect.

Experience indicates that the majority of covered leaks relate to fittings and joints on pipes. It is less frequent that situated tanks themselves experience failure.

In 2008, the state legislature enacted Senate Bill 907, which – among other things – extended the PSTIF’s “sunset date” to December 31, 2020.

In July 2008 the Board of Trustees lowered the "transport load fee" from \$40 per 8,000 gallons to \$20 per 8,000 gallons. This fee was effective with revenue received in November 2008.

### *Operation of the Fund*

Claims filed by persons who are or were insured at the time the contamination was discovered are called “insurance claims”. Many of the insurance claims involve cleanup of historical contamination released into the environment during a lengthy period of operation of the storage tanks, including operation prior to implementation of today’s environmental standards.

## Loss Projections for Missouri Petroleum Storage Tank Insurance Fund

The insurance protection provided by the Petroleum Storage Tank Insurance Fund to active tank owners includes coverage for up to \$1 million per occurrence, \$2 million annual aggregate, for costs of cleanup, third-party property damage, and third-party bodily injury. There is a deductible of \$10,000 per occurrence.

Claims filed to clean up a “pre-existing” leak/spill at an insured site, or an “out-of-use” tank site, are called “remedial claims.”

For “remedial claims,” the Petroleum Storage Tank Insurance Fund pays up to \$1 million for cleanup costs per site; there is no coverage for third-party property damage or third-party bodily injury. The person doing the cleanup must pay the first \$10,000 of cleanup costs.

A claim reserve is established for each instance where a release is confirmed and the site is eligible to receive benefits from the Petroleum Storage Tank Insurance Fund. The claim reserves are adjusted on an ongoing basis as more information about the site, the extent of contamination, and the planned cleanup is available. No claim reserve for future claims is currently maintained.

All claim files of the Petroleum Storage Tank Insurance Fund are maintained at offices located in Jefferson City, MO.

A balance sheet and income statement are prepared monthly, using information provided by the State Accounting System and data maintained by the Petroleum Storage Tank Insurance Fund board of trustees’ third party administrator under the provisions of its contract.

The board of trustees’ third-party administrator provides services in the following four areas:

- Underwriting, including the receipt and review of initial insurance applications and annual insurance renewal applications. This process includes a compliance review of the facility’s operating records, including review of leak detection records, maintenance documents, logs of cathodic protection system readings, etc.
- Claims management, including the receipt of notices of claims, claims investigation and adjusting services, eligibility determinations, receipt and review of cost estimates from owners and/or their consultants for characterizing and cleaning up contamination, review of invoices, and preparation of payment recommendations.
- Record-keeping and other administrative services, including design and maintenance of software for maintaining official records of the Petroleum Storage Tank Insurance Fund, maintenance of the Petroleum Storage Tank Insurance

## Loss Projections for Missouri Petroleum Storage Tank Insurance Fund

Fund web site, receipt of and response to public inquiries, technical assistance to tank owners, and other support services for the Executive Director and the board of trustees.

The Attorney General's Office (AGO) annually receives approval from the board of trustees for an appropriation from the Petroleum Storage Tank Insurance Fund to support one-half an FTE. This person provides legal advice and counsel to the board of trustees and the Executive Director.

The board of trustees has also engaged outside counsel to defend insured tank owners/operators when a third-party claimant files litigation against the tank owner/operator.

The Department of Revenue annually receives approval from the board of trustees for an appropriation from the Petroleum Storage Tank Insurance Fund to pay for its services collecting the transport load fee.

The Department of Natural Resources annually receives approval from the board of trustees for an appropriation from the Petroleum Storage Tank Insurance Fund to support its regulatory activities. This is an ongoing administrative expense.

Today, PSTIF insures 7,308 underground storage tanks at 2,656 sites. It also insures 2,130 aboveground storage tanks at 548 sites, although it expects this exposure to increase as a result of the new requirement for aboveground storage tank owners to have a "financial responsibility mechanism" in place by December 31, 2010.

Prior actuarial studies have been completed on the fund. These include:

- A review of the Petroleum Storage Tank Insurance Fund operations and an actuarial study performed by Milliman & Robertson in 1996.
- An actuarial study performed by Matthews Actuarial LLC in 2003.
- An actuarial study performed by Pinnacle Actuarial in 2005.
- An actuarial study performed by Kerper and Bowron LLC in 2007.

### 6. Impact of "Risk Based Guidance" on Actuarial Results

The Department of Natural Resources issued risk-based guidance standards in February 2004. These standards replace the previous standards under which claims were settled and "no further action" letters issued. The purpose of the standards was to replace a rigid system of environmental standards with a more flexible system which reflected the risk that specific contaminants posed for a given site.

At the time the standards were implemented, about 1,500 claims were in the process of settlement. Some of these claims were settled under the old standards but the majority were settled under the new "risk based" standards.

## Loss Projections for Missouri Petroleum Storage Tank Insurance Fund

While it is difficult to say what the impact of the new standards will be, it might be expected that claim settlement costs could be lower under the new standards since environmentally unnecessary work will not be required. Also, there is some concern that claim settlement rates might decrease as claims remain open for longer periods as analysis is done to determine the amount of remediation necessary for the site.

Even though the risk-based guidance has now been in effect for 5 1/2 years, it is still difficult to accurately gauge the impact of the standards on the overall costs of the system. This is due to the fact that accurate measures of risk based guidance can not be ascertained until a claim is near closed. Also, the claim age is so different between claims closed under the old and the new standard that is difficult to make comparisons.

There is little evidence that reserve adequacy or claim closure rates have changed dramatically under the new system. However credibility issues prevent an accurate measurement of the new standards.

Reported severities by age appear to be stable for UST insurance claims, while there is some evidence that severities are decreasing for UST Remedial claims and AST claims.

Future claim severities are estimated from the last several accident/report years (after the imposition of risk-based guidance) so this projection should reflect settlement amounts under the RBCA standard.

There is ongoing discussion about changing the risk-based standards to close claims. These prospective changes were not contemplated in this report.

### 7. Actuarial Methodology

#### *Data*

Loss data was developed from a transactional pull from the PSTIF's claims system. Loss data was from inception until June 30, 2009. Data was analyzed on a fiscal year basis. Revenue was generated from reports provided by the PSTIF. These exhibits showed the transport load fees, initial tank fees, and annual participation fees.

Data was segregated into the type of claim (Insurance/Remedial) and the type tank system (AST/UST). In addition, it was discovered that development patterns for insured UST tanks differed by the cause of loss. For the purposes of this report UST Insurance claims were divided into 3 separate subcategories: Closure, Release, and Sale/Other. Claims which were the result of a "Sale" appear to develop much slower than other types of claims.

Claim type was not credible for AST claims, and it is not available for remedial claims. Therefore, there are no breakouts for these types of claims.

## Loss Projections for Missouri Petroleum Storage Tank Insurance Fund

Summarizing the above classifications, data was analyzed for the following 6 categories:

1. Insurance UST-Release
2. Insurance UST-Other
3. Insurance UST-Closure
4. Insurance AST claims
5. Remedial UST claims
6. Remedial AST claims

For insurance claims, the data was organized on an “accident year” basis. For remedial claims, the data was organized on a report year basis. In all cases, dates have been converted to a fiscal year basis (July 1 – June 30) and so a claim that occurred and was reported on July 1, 2005 would be a fiscal year 2006 claim.

### *Projection Methods*

Each of these categories was analyzed for past patterns of loss development. Because of the volatility of these claims, loss development was often not consistent. Loss development was not credible for the later periods, and significant judgment was utilized in selecting loss development for later periods, especially for paid losses.

These losses are developed in Exhibit III. All 6 categories utilized the first two methods, while only the insurance claims were appropriate for the Bornhuetter-Ferguson method.

*“Reported Loss Development”* – Paid losses and case reserves (reported losses) are grouped by age and projected to ultimate

*“Paid Loss Development”* – Paid losses are grouped by age and projected to ultimate

*“Reported Bornhuetter-Ferguson Method”* - This method applies reported loss development to the “expected losses” for a given year.

In this case, expected losses were derived from the participation fees for UST and AST insurance. In these cases, the ratio of claims to the fees will not be meaningful except in establishing a baseline ratio for expected claims.

*“Paid Bornhuetter-Ferguson Method”* - This method applies paid loss development to the “expected losses” for a given year.

*“Frequency/Severity Method”* – This method combines ultimate frequency and severity together. This method was used to project report year losses from 2010 – 2019.

Ultimate losses were selected from the Reported Method and the Paid Method.

In general, there appeared to be very little development on reported losses after 5 years. Paid losses, however, appear to continue to develop even on years prior to the year 2000.

## Loss Projections for Missouri Petroleum Storage Tank Insurance Fund

This typically results in the paid loss estimate being higher than the reported loss estimate.

### *Claims Disposal Rates*

- For Insurance UST claims, there is some evidence that claims are closing more quickly than historically. For AST lines, there is some evidence that claims are staying open a bit longer.

### *Current Case Reserving*

Consistent case reserving is critical for actuarial projections.

- Case reserves at the end of a fiscal year are estimated to be 34% and 78% of ultimate settlement levels depending on the type of claim. Remedial claims tend to be reserved more quickly since we account for claims when they are reported rather than when they occur.
- Development on case reserves would be considered normal or low by industry standards.
- Claim severities for UST Insurance claims appear to be stable over time. There is some evidence that severities for UST Remedial and AST claims are dropping.
- It is not recommended that any major changes occur to case reserving methodology unless external circumstances dictate. This is due to the adequacy of current reserving, as well as the impact that reserving changes would have on future actuarial analysis.

### *Projected Ultimate Liabilities as of June 30, 2009*

As noted above, this report makes an actuarial estimate of liabilities at June 30, 2009 of 116,153K for the Fund. This includes 67,688K of case reserves and 48,465K of IBNR.

### *Projected Fiscal Year Results*

Balance sheet and income statements were projected through 2019. It was decided to only project losses through 2019 since projections beyond this date are highly subjective.

In general, the Williams and Company projections were used as a basis for these projections for the revenue and expense items. However some minor changes were made to the Williams and Company numbers.

Losses were derived from the ultimate loss selections as well as the frequency and severity of new claims in the years 2010 through 2019. These claims are paid out according to the selected payout pattern that is based on historical data.

## Loss Projections for Missouri Petroleum Storage Tank Insurance Fund

### *Projected Equity*

The projected equity is defined at the projected balance of the fund less the projected loss liabilities of the fund. The loss liabilities would the estimated amount needed to close all the loss obligations of the fund. This would include settling any existing remedial claims and insurance claims, as well as settling any insurance claims which are subsequently reported but occurring before the evaluation date.

### *Investment Income*

Assets held by the fund are invested by the State of Missouri in a variety of short term highly liquid assets such as US Treasuries. The average length to maturity for the fund's assets is slightly over 1 year. For this reason, the fund's investments are subject to the direction of short term interest rates. Recently, those investments have been earning less than 1% annually, but historically the rate has been higher. We have utilized a rate of 2.5% in our projections, which would assume that short-term rates will return closer to their historical norms.

## 8. Issues specific to this RFP

### **Reinsurance**

A brief evaluation of reinsurance has been requested as part of this RFP.

Reinsurance has many functions. Some of the main functions of reinsurance are:

- Risk transfer -- reinsurance is a tool to transfer large risks from the insurer or fund to the reinsurer.
- Income smoothing -- Reinsurance can be used to absorb large losses and normalize income for the fund.
- Surplus relief -- For insurance companies without adequate capital, reinsurance is often used as a tool to underwrite more risk than their capital structure would permit.
- Arbitrage -- If the rates for the reinsurer are below the rates available in the market, then an insurance company or fund might choose to reinsurance the risks in order to guarantee a certain margin

For the purposes of the Missouri PSTIF, only risk transfer would be an applicable reason to purchase reinsurance. Income smoothing and surplus relief are not necessary for a governmental fund. Arbitrage would likely not exist for this type of risk.

Reinsurance is typically purchased either directly from the reinsurer or through a network of reinsurance brokers. Reinsurance can be underwritten in a wide variety of forms. For example, a reinsurance contract might indemnify the fund for a claim amount above a certain level, such as \$500,000. A reinsurance contract could potentially be structured

## Loss Projections for Missouri Petroleum Storage Tank Insurance Fund

such that the payments from the fund in a specific layer would be covered, such as annual payments between \$25 million and \$50 million might be covered.

Preliminary inquiries indicate that reinsurance might be available for this fund; however, additional analysis would need to be undertaken to determine the terms and conditions that the market would offer.

### **Large Claims (above \$250,000)**

Information concerning large claims is included in Exhibit VI.

While large claims represent a substantial portion of the payments from this fund (similar to many insurance ventures), it is difficult to segregate and analyze these claims in a meaningful way.

This is because most large claims began as small claims and develop to larger claims over time. We've included some statistics as to the amount of large claims and the historical amount of large claims by report year. Not surprisingly the percentage of large claims increases for older report years. Approximately 50% of all claim payments are expected to be for designated large claims once all the claims close.

### **Extending reporting provisions**

Extended reporting provisions represent a small exposure base for the fund, with approximately 343 in force with an average premium of \$357. There is no discount offered for the extended reporting provision, the endorsement is offered at the same rate as the existing business.

There have been a number of claims associated with extended reporting provisions. In many cases, it appears that extended reporting provisions are obtained by tank owners when they sell the property. The claims are then reported under the extended reporting provision, often within a short time frame from the sale. Therefore, if extended reporting provisions were not available, it is not likely that the fund would have significantly different exposure for these claims since the sale would likely be delayed until the claim could be reported.

### **Impact of Financial Responsibility for AST Owners**

After December 31, 2010, AST owners must provide proof of financial responsibility, which will cause an increase to the fund's liabilities. Currently, the fund insures about 35% of all ASTs in Missouri. We are projecting that compliance will be at 60% by December 31, 2010 increasing to 82.5% by December 31, 2011. Since tank participation fees do not fully cover the cost of insuring a tank, we would expect that this would be a net negative to the fund over the long term.

## Loss Projections for Missouri Petroleum Storage Tank Insurance Fund

However, since there is a substantial delay between revenue received and claims paid, we are projecting that by 2019, the fund cash balance will decrease by only about \$5 million due to this requirement while the liabilities of the fund will increase by \$17 million.

### 9. Simulations

Actuarial modeling is a catchall phrase that usually means any type of activity where you use a large volume of historic data to create a representation of a business situation so you can analyze it. Your representation, or model, can be used to examine the situation, and help you understand what the future might bring.

Our analysis builds a model using a technique called "stochastic simulation" (also known as "Monte Carlo Simulation") to combine all the uncertainties in the model. Unlike traditional models, this technique does not force us to reduce what we know about an uncertain future event (e.g. inflation, interment sales, etc.) to a single number. Instead, we include all we know about the variable, including its full range of possible values and some measure of likelihood of occurrence for each possible value. We use all this information to analyze every possible outcome. This model simulates 100 year-end balance sheets.

We apply this model to several "input scenarios" and catalog the results of the model. The details of each input scenario are described in *Input Scenarios Used* later in this Section.

Each application of the model is run 5,000 times; it's as if we ran 5,000 "what-if" scenarios all at once. In effect, it's as if you could "live" through your situation over and over again, each time under a different set of conditions, with a different set of results occurring. All this added information sounds like it might complicate your decisions, but in fact, one of simulation's greatest strengths is its power of communication. Our analysis gives you results that graphically illustrate the risks you face. This graphical presentation is easily understood by you, and easily explained to others.

There are some limitations however to an analysis such as this. While we can model the statistical uncertainty in our calculations we are unable to model all the variance associated with the future finances of the fund. This is due to the potential for an external event, such as an inflationary shock or a judicial decision that does not exist in our historical database. Therefore the actual ranges of results for the fund are likely more variable than this analysis suggests. Nevertheless this remains a good tool for planning.

#### Description of Actuarial Model

The actuarial model shown in the exhibits included with this report is considered the most likely, "average" outcome. Our model calculated fund balances and projected equity under 5,000 different claim payment scenarios, each scenario being equally likely as the

## Loss Projections for Missouri Petroleum Storage Tank Insurance Fund

prior. The results from each individual scenario are not shown, but rather summarized in the simulation graphs and tables in this report.

The most uncertain component affecting our projections of future PSTIF fund balances are our projections of ultimate claim payments for each individual report year, and the dollar amount of claim payment occurring in each specific calendar year. These are the values we simulated. The process of using simulations to understand the range of likely outcomes is called a stochastic analysis.

Specifically, the payment in each calendar year between 2010 and 2019 emanating from report/accident years 1991 to 2009 were separately simulated for the six types of claims in the study.

Based on the simulated claim payments in each scenario, the year-end fund balances and projected equity for 2010 to 2019 were recorded. We then re-simulated claim payments for our next scenario, and again recorded, the year-end fund balances and projected equity for 2010 to 2019. This process was repeated 5,000 times.

### *Technical Description of Simulation Distributions*

In order to simulate the claim payments, a statistical distribution must be chosen in order to reasonably reflect the range of possible results. For the purposes of this study, we chose the lognormal distribution as the distribution type for the claim payments.

- For each simulated payment amount we used a separate gamma distribution with separate parameters. The gamma distribution is widely accepted as a representative distribution of financial information.
- For future frequency of claims we used a Poisson distribution.
- For the future severity of claims we used a lognormal distribution.
- For the investment income rates and trends to severity and frequency, we used a triangular distribution.

## DISCUSSION OF RESULTS

We produced 10 histograms and one distribution summary graph for each projection.

Our simulations show that the range of possible outcomes increases the further into the future we perform projections of fund balances and projected equity.

### **Notes on Projection**

- The fund balance in 2019 is projected to be approximately \$33 million.
- We would expect that the fund would have a positive cash balance in 2019, but there is a 5% chance that the fund would be out of cash on this date.
- In 2014, there is an 80% chance that the fund balance will be between \$48 million and \$61 million.

## Loss Projections for Missouri Petroleum Storage Tank Insurance Fund

- We estimate that the cash balance will decrease each year about \$5.1 million dollars on average over the next 10 years.
- Negative equity in the fund (the excess of liabilities over assets) is currently \$29 million. We project equity will continue to decrease to negative \$58 million by 2019.
- In 2014, there is an 80% chance that the equity in the fund will be between -\$59 million and -\$23 million.
- There is less than a 5% chance the fund will be solvent by 2019 (assets greater than liabilities).
- We analyzed our assumptions for the biggest impact on short term and long range forecasts. For the short range forecast (FY 2014), the biggest impact was due to the following factors:
  - Settlement values of existing UST Remedial Claims
  - Investment Income
  - Future Severity of UST Insurance Claims - Closure
- For the long range forecast (FY 2019), the biggest impact was due to the following factors:
  - Future Severity of AST Insurance Claims
  - Future Frequency of AST Insurance Claims
  - Future Severity of UST Insurance Claims - Closure

### GLOSSARY OF TECHNICAL TERMS

Histogram – A histogram is made from several rectangles plotted on the graph. The left and right position of each rectangle represents a range of possible results (e.g. a rectangle that spreads from \$10 million to \$20 million represents all scenarios that had an output between \$10 million and \$20 million). The height of each rectangle represents the percentage of scenarios with that result. The higher the rectangle, the more likely the result will occur.

Monte Carlo Simulation -- A mathematical simulation of future results where unknown values are selected randomly based on their probability distribution and correlation. Typically, hundreds, or even thousands of simulations are produced through computer analysis. A professional must then compile and analyze the results in order to determine reasonable conclusions. A series of Monte Carlo simulations can provide conclusions such as "There is a 5% chance that revenues will be less than \$500,000", or "If the product launch in Denver is successful, there is still a 2% chance that revenues will be less than \$500,000."

Statistical Distribution -- A mathematical formula indicating the likelihood of a random number taking on a specific value.

Stochastic Analysis -- A type of statistical analysis that relies on the use of statistical distributions of unknown variables rather than "best estimates" of those unknown variables. A stochastic analysis usually relies on Monte Carlo simulations.

MISSOURI PETROLEUM STORAGE TANK INSURANCE FUND  
All Programs

ALL LINES  
SELECTED ULTIMATE LOSSES

Accident Quarter	Total Revenue	Paid To Date	Case Reserves	INDICATED ULTIMATE LOSS				Selected Ultimate Losses	Gross IBNR
				Rep Dev	Rep BF	Paid Dev	Paid BF		
1991	0	87	87	183	183	106	106	164	(11)
1992	0	0	0	0	0	0	0	0	0
1993	0	453	85	564	564	545	545	560	22
1994	0	3,064	548	3,793	3,793	3,715	3,715	3,773	161
1995	0	3,325	356	3,898	3,898	4,114	4,114	3,954	274
1996	0	52,522	12,973	68,977	68,977	62,359	62,359	69,233	3,738
1997	0	13,915	2,394	17,459	17,459	18,228	18,228	17,648	1,339
1998	15,308	20,802	4,064	27,198	27,425	28,619	29,016	27,410	2,544
1999	14,664	19,037	4,639	26,634	25,650	28,266	25,802	26,834	3,158
2000	15,208	22,781	7,911	35,006	34,171	36,126	33,546	35,455	4,763
2001	15,075	7,248	4,813	14,635	14,343	12,237	12,562	14,771	2,710
2002	18,106	8,147	3,728	14,254	14,107	14,843	14,233	14,665	2,790
2003	24,668	5,993	3,863	12,329	12,394	11,981	11,863	12,481	2,625
2004	25,588	6,684	3,663	13,822	13,535	15,182	14,497	14,141	3,794
2005	25,483	5,295	3,670	12,002	12,538	12,999	13,625	12,258	3,293
2006	24,495	1,987	2,384	6,460	8,100	5,460	9,553	6,316	1,945
2007	24,916	4,333	3,848	12,540	12,509	17,785	13,232	13,907	5,726
2008	24,905	2,585	4,358	11,803	11,688	17,972	12,659	13,159	6,217
2009	15,270	448	4,304	8,497	10,149	7,152	12,193	8,130	3,378
GRAND TOTAL	243,686	178,706	67,688	290,053	291,483	297,688	291,847	294,859	48,465
								Current Balance	86,588
								Redundancy/(Def)	(29,565)

MISSOURI PETROLEUM STORAGE TANK INSURANCE FUND  
All Programs

INSURANCE LINES  
SELECTED ULTIMATE LOSSES

Accident Quarter	Exposure Estimate	Paid To Date	Case Reserves	INDICATED ULTIMATE LOSS				Selected Ultimate Losses	Gross IBNR	Exposure Ratio
				Rep Dev	Rep BF	Paid Dev	Paid BF			
1991	0	87	87	183	183	106	106	164	(11)	0.0%
1992	0	0	0	0	0	0	0	0	0	0.0%
1993	0	453	85	564	564	545	545	560	22	0.0%
1994	0	3,064	548	3,793	3,793	3,715	3,715	3,773	161	0.0%
1995	0	3,129	319	3,637	3,637	3,862	3,862	3,693	245	0.0%
1996	0	6,800	617	7,984	7,984	9,008	9,008	8,240	824	0.0%
1997	0	7,192	1,216	9,039	9,039	9,795	9,795	9,228	820	0.0%
1998	1,492	7,122	1,754	9,749	9,976	10,424	10,821	9,961	1,085	667.4%
1999	1,251	12,000	2,786	16,785	15,801	17,891	15,427	16,985	2,199	1357.7%
2000	1,160	10,720	2,490	15,251	14,415	16,884	14,304	15,700	2,490	1353.6%
2001	1,162	5,382	2,347	9,520	9,229	9,012	9,337	9,657	1,928	831.2%
2002	1,225	6,451	2,476	10,879	10,732	11,771	11,161	11,290	2,363	921.8%
2003	1,225	5,274	3,050	10,494	10,559	10,476	10,357	10,646	2,322	869.1%
2004	1,252	5,276	2,557	10,756	10,470	11,745	11,061	11,076	3,242	884.4%
2005	1,285	4,203	2,072	8,863	9,399	10,028	10,653	9,118	2,843	709.4%
2006	1,297	1,783	2,042	5,818	7,459	4,809	8,903	5,675	1,849	437.6%
2007	1,277	3,934	3,100	11,153	11,122	16,144	11,591	12,520	5,486	980.7%
2008	1,286	2,292	4,041	11,020	10,905	16,180	10,868	12,376	6,044	962.1%
2009	1,285	355	3,624	7,488	9,140	5,473	10,514	7,121	3,142	554.2%
GRAND TOTAL	15,197	85,517	35,211	152,976	154,406	167,868	162,028	157,782	37,055	1038.2%

MISSOURI PETROLEUM STORAGE TANK INSURANCE FUND

ALL REMEDIAL SUMMARY

ALL REMEDIAL LINES  
SELECTED ULTIMATE LOSSES

Accident Quarter	Paid To Date	Case Reserves	INDICATED ULTIMATE LOSS		Selected Ultimate Losses	Gross IBNR
			Rep Dev	Paid Dev		
1991	0	0	0	0	0	0
1992	0	0	0	0	0	0
1993	0	0	0	0	0	0
1994	0	0	0	0	0	(0)
1995	196	37	261	252	261	28
1996	45,722	12,356	60,993	53,350	60,993	2,914
1997	6,722	1,179	8,420	8,433	8,420	519
1998	13,680	2,310	17,449	18,195	17,449	1,459
1999	7,037	1,853	9,849	10,375	9,849	959
2000	12,061	5,422	19,755	19,242	19,755	2,272
2001	1,867	2,466	5,115	3,225	5,115	782
2002	1,696	1,252	3,375	3,072	3,375	427
2003	719	813	1,835	1,506	1,835	303
2004	1,408	1,106	3,065	3,437	3,065	551
2005	1,093	1,597	3,139	2,972	3,139	449
2006	204	342	642	650	642	96
2007	399	748	1,387	1,641	1,387	240
2008	293	317	783	1,792	783	173
2009	93	679	1,009	1,679	1,009	236
GRAND TOTAL	93,190	32,478	137,077	129,820	137,077	11,410

1/13/2010

MISSOURI PETROLEUM STORAGE TANK INSURANCE FUND  
FISCAL YEAR PROJECTIONS  
PROJECTION

	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019
<b>Annual Revenues</b>										
Transport Load Fees	\$11,782,513	11,867,500	11,986,175	12,106,037	12,227,097	12,349,368	12,472,862	12,597,590	12,723,566	12,850,802
\$100 Initial tank fees	\$24,402	\$68,661	\$105,111	\$24,402	\$24,402	\$24,402	\$24,402	\$24,402	\$24,402	\$24,402
UST Participation Fees	\$947,438	\$1,025,994	\$1,025,994	\$1,025,994	\$1,025,994	\$1,025,994	\$1,025,994	\$1,025,994	\$1,025,994	\$1,025,994
AST Participation Fees	\$225,959	\$401,939	\$552,666	\$552,666	\$552,666	\$552,666	\$552,666	\$552,666	\$552,666	\$552,666
Interest Income	\$1,731,645	\$2,029,024	\$1,882,876	\$1,728,163	\$1,559,820	\$1,373,241	\$1,250,993	\$1,128,794	\$1,015,593	\$906,616
<b>Total Revenues</b>	<b>\$14,711,956</b>	<b>\$15,393,119</b>	<b>\$15,552,822</b>	<b>\$15,437,262</b>	<b>\$15,389,979</b>	<b>\$15,325,672</b>	<b>\$15,326,917</b>	<b>\$15,329,447</b>	<b>\$15,342,222</b>	<b>\$15,360,481</b>
<b>Annual Expenditures</b>										
<b>Administrative Expenses:</b>										
Third Party Administrative Expenses	\$3,339,312	\$3,406,098	\$3,474,220	\$3,543,704	\$3,614,578	\$3,686,870	\$3,760,607	\$3,835,819	\$3,835,819	\$3,835,819
Section 319.107 Expenses	\$15,450	\$15,914	\$16,391	\$16,883	\$17,389	\$17,911	\$18,448	\$19,002	\$19,572	\$20,159
Inspections	\$330,805	\$340,729	\$350,951	\$361,480	\$372,324	\$383,494	\$394,999	\$406,849	\$419,054	\$431,626
Training & Loss Prevention Services	\$51,500	\$53,045	\$54,635	\$56,275	\$57,964	\$59,703	\$61,494	\$63,339	\$65,239	\$67,196
Other Professional Expenses	\$96,000	\$98,880	\$101,846	\$104,902	\$108,049	\$111,290	\$114,629	\$118,068	\$121,610	\$125,258
Legal Expenses	\$46,350	\$47,741	\$49,173	\$50,648	\$52,167	\$53,732	\$55,344	\$57,005	\$58,715	\$60,476
Department of Revenue	\$39,500	\$40,685	\$41,906	\$43,163	\$44,458	\$45,791	\$47,165	\$48,580	\$50,037	\$51,539
Attorney General's Office	\$38,625	\$39,784	\$40,977	\$42,207	\$43,473	\$44,777	\$46,120	\$47,504	\$48,929	\$50,397
PSTIF Board/Staff	\$195,700	\$201,571	\$207,618	\$213,847	\$220,262	\$226,870	\$233,676	\$240,686	\$247,907	\$255,344
Department of Natural Resources	\$1,219,117	\$1,255,691	\$1,293,362	\$1,332,162	\$1,372,127	\$1,413,291	\$1,455,690	\$1,499,360	\$1,544,341	\$1,590,672
<b>Total Administrative Expenses</b>	<b>\$5,372,359</b>	<b>\$5,500,137</b>	<b>\$5,631,080</b>	<b>\$5,765,270</b>	<b>\$5,902,791</b>	<b>\$6,043,729</b>	<b>\$6,188,172</b>	<b>\$6,336,211</b>	<b>\$6,411,223</b>	<b>\$6,488,485</b>
<b>State Government Expenses:</b>	<b>\$110,174</b>	<b>\$113,479</b>	<b>\$116,884</b>	<b>\$120,390</b>	<b>\$124,002</b>	<b>\$127,722</b>	<b>\$131,554</b>	<b>\$135,500</b>	<b>\$139,565</b>	<b>\$143,752</b>
<b>Claim Payments:</b>										
UST Insurance Claims - Release	\$1,113,923	\$1,260,923	\$1,334,976	\$1,397,144	\$1,456,147	\$1,460,794	\$1,383,265	\$1,362,221	\$1,353,673	\$1,357,026
UST Insurance Claims - Other	\$2,266,245	\$2,408,156	\$2,388,323	\$2,283,091	\$2,229,403	\$2,211,600	\$2,150,678	\$2,106,149	\$2,056,861	\$2,028,355
UST Insurance Claims - Closure	\$3,471,381	\$3,745,532	\$3,874,408	\$3,956,398	\$4,027,022	\$3,888,593	\$3,848,666	\$3,761,359	\$3,700,397	\$3,683,601
UST Remedial Claims	\$5,792,972	\$6,096,264	\$5,958,139	\$5,927,315	\$5,941,020	\$5,978,985	\$5,748,535	\$5,287,563	\$5,078,209	\$5,611,180
AST Insurance Claims	\$1,831,640	\$1,788,540	\$1,995,505	\$2,284,886	\$2,757,568	\$3,010,222	\$3,253,451	\$3,384,866	\$3,528,809	\$3,625,409
AST Remedial Claims	\$491,237	\$596,257	\$718,607	\$718,132	\$706,173	\$736,830	\$750,849	\$715,116	\$659,973	\$378,562
Subrogation	(\$310,522)	(\$270,226)	(\$276,580)	(\$281,538)	(\$290,995)	(\$242,879)	(\$240,303)	(\$231,494)	(\$227,425)	(\$215,830)
<b>Total Claim Payments</b>	<b>\$14,656,875</b>	<b>\$15,625,445</b>	<b>\$15,993,369</b>	<b>\$16,285,328</b>	<b>\$16,826,338</b>	<b>\$14,044,144</b>	<b>\$13,895,142</b>	<b>\$13,385,780</b>	<b>\$13,150,498</b>	<b>\$12,468,502</b>
<b>Total Expenditures</b>	<b>\$20,139,408</b>	<b>\$21,239,061</b>	<b>\$21,741,332</b>	<b>\$22,170,988</b>	<b>\$22,853,131</b>	<b>\$20,215,595</b>	<b>\$20,214,888</b>	<b>\$19,857,491</b>	<b>\$19,701,286</b>	<b>\$19,100,740</b>
<b>Excess Revenue (Expenditures)</b>	<b>(\$5,427,452)</b>	<b>(\$5,845,943)</b>	<b>(\$6,188,510)</b>	<b>(\$6,733,726)</b>	<b>(\$7,463,152)</b>	<b>(\$4,889,924)</b>	<b>(\$4,887,951)</b>	<b>(\$4,528,044)</b>	<b>(\$4,359,065)</b>	<b>(\$3,740,259)</b>
Cash balance @ 7-1-2009	\$86,588,418									
<b>Funds Available at Year End</b>	<b>\$81,160,966</b>	<b>\$75,315,023</b>	<b>\$69,126,513</b>	<b>\$62,392,787</b>	<b>\$54,929,635</b>	<b>\$50,039,712</b>	<b>\$45,151,761</b>	<b>\$40,623,717</b>	<b>\$36,264,652</b>	<b>\$32,524,393</b>
Interest Rate	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
Annual Interest Income	\$2,029,024	\$1,882,876	\$1,728,163	\$1,559,820	\$1,373,241	\$1,250,993	\$1,128,794	\$1,015,593	\$906,616	\$813,110
<b>Loss Reserve @ Year-End</b>	114,331,712	108,930,779	103,689,117	99,622,126	95,067,269	93,405,533	91,958,502	91,093,085	90,530,778	90,726,339
<b>Equity at Year-End</b>	(33,170,746)	(33,615,756)	(34,562,604)	(37,229,339)	(40,137,633)	(43,365,821)	(46,806,741)	(50,469,368)	(54,266,126)	(58,201,946)

MISSOURI PETROLEUM STORAGE TANK INSURANCE FUN  
UST INSURANCE RELEASE  
ADJUSTED TRENDED ULTIMATE LOSSES

Accident Year	ULTIMATE CLAIMS	ULT SEV	Selected TREND FACTOR	ADJ ULT
1993	0	0	1.000	0
1994	1	121,107	1.000	121,107
1995	3	91,770	1.000	91,770
1996	7	157,602	1.000	157,602
1997	14	166,201	1.000	166,201
1998	14	162,848	1.000	162,848
1999	8	110,790	1.000	110,790
2000	7	97,784	1.000	97,784
2001	5	171,004	1.000	171,004
2002	10	107,200	1.000	107,200
2003	10	206,568	1.000	206,568
2004	8	95,072	1.000	95,072
2005	6	94,755	1.000	94,755
2006	2	99,505	1.000	99,505
2007	8	470,982	1.000	470,982
2008	7	756,055	1.000	756,055
2009	4	214,581	1.000	214,581
AVERAGE	8			206,974
SELECTED	5.4			246,191

MISSOURI PETROLEUM STORAGE TANK INSURANCE FUN  
UST INSURANCE OTHER  
ADJUSTED TRENDED ULTIMATE LOSSES

Accident Year	ULTIMATE CLAIMS	ULT SEV	Selected TREND FACTOR	ADJ ULT
1993	7	64,180	1.000	64,180
1994	32	90,127	1.000	90,127
1995	20	121,998	1.000	121,998
1996	13	135,112	1.000	135,112
1997	14	212,752	1.000	212,752
1998	18	92,268	1.000	92,268
1999	12	227,526	1.000	227,526
2000	39	118,680	1.000	118,680
2001	13	107,385	1.000	107,385
2002	31	94,107	1.000	94,107
2003	33	101,308	1.000	101,308
2004	28	157,547	1.000	157,547
2005	13	200,960	1.000	200,960
2006	11	170,065	1.000	170,065
2007	15	85,908	1.000	85,908
2008	12	134,685	1.000	134,685
2009	15	145,697	1.000	145,697
AVERAGE	13			132,672
SELECTED	13			132,672

MISSOURI PETROLEUM STORAGE TANK INSURANCE FUN  
UST INSURANCE CLOSURE  
ADJUSTED TRENDED ULTIMATE LOSSES

Accident Year	ULTIMATE CLAIMS	ULT SEV	Selected TREND FACTOR	ADJ ULT
1993	2	48,484	1.000	48,484
1994	9	74,339	1.000	74,339
1995	12	66,137	1.000	66,137
1996	36	128,998	1.000	128,998
1997	53	61,731	1.000	61,731
1998	65	69,004	1.000	69,004
1999	95	102,113	1.000	102,113
2000	51	105,281	1.000	105,281
2001	28	75,662	1.000	75,662
2002	42	106,263	1.000	106,263
2003	35	94,262	1.000	94,262
2004	36	71,235	1.000	71,235
2005	36	92,970	1.000	92,970
2006	30	67,567	1.000	67,567
2007	42	114,424	1.000	114,424
2008	34	111,083	1.000	111,083
2009	27	128,195	1.000	128,195
AVERAGE	34			94,005
SELECTED	34			94,005

MISSOURI PETROLEUM STORAGE TANK INSURANCE FUN  
UST REMEDIAL  
ADJUSTED TRENDED ULTIMATE LOSSES

Accident Year	ULTIMATE CLAIMS	ULT SEV	Selected TREND FACTOR	ADJ ULT
1996	502	120,759	1.000	120,759
1997	86	97,448	1.000	97,448
1998	147	114,210	1.000	114,210
1999	97	86,937	1.000	86,937
2000	151	104,302	1.000	104,302
2001	70	51,990	1.000	51,990
2002	47	63,927	1.000	63,927
2003	24	56,040	1.000	56,040
2004	31	68,807	1.000	68,807
2005	22	139,796	1.000	139,796
2006	13	47,288	1.000	47,288
2007	17	67,456	1.000	67,456
2008	11	52,304	1.000	52,304
2009	12	55,278	1.000	55,278
AVERAGE	88			102,597
SELECTED	18			80,467

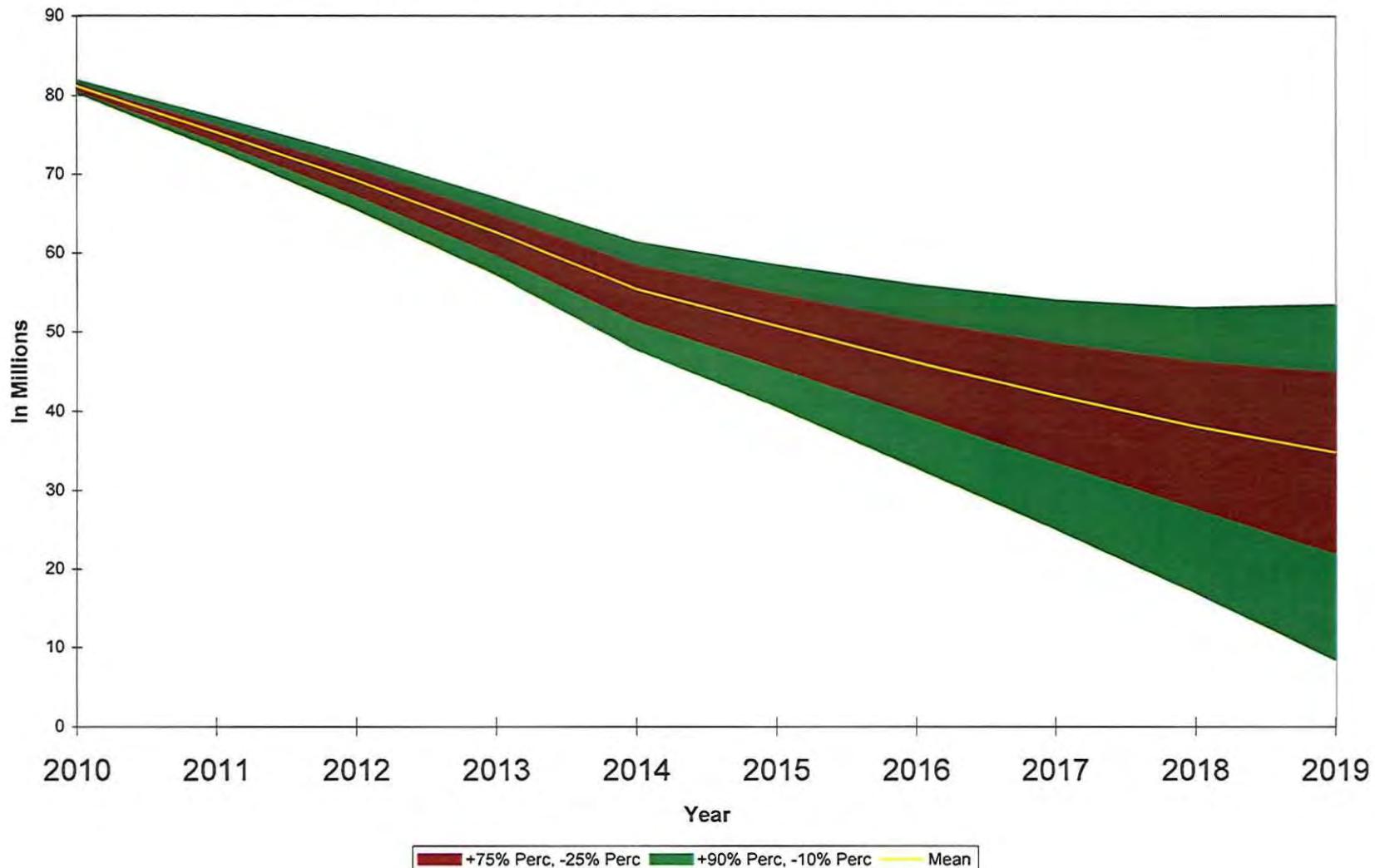
MISSOURI PETROLEUM STORAGE TANK INSURANCE FUN  
AST INSURANCE  
ADJUSTED TRENDED ULTIMATE LOSSES

Accident Year	ULTIMATE CLAIMS	ULT SEV	Selected TREND FACTOR	ADJ ULT
1998	1	681,329	1.000	681,329
1999	6	347,488	1.000	347,488
2000	8	465,078	1.000	465,078
2001	19	261,082	1.000	261,082
2002	7	301,511	1.000	301,511
2003	21	91,923	1.000	91,923
2004	17	169,920	1.000	169,920
2005	17	129,479	1.000	129,479
2006	4	445,163	1.000	445,163
2007	8	230,463	1.000	230,463
2008	8	131,329	1.000	131,329
2009	6	143,223	1.000	143,223
AVERAGE	8.74			213,851
SELECTED	8.67			215,931

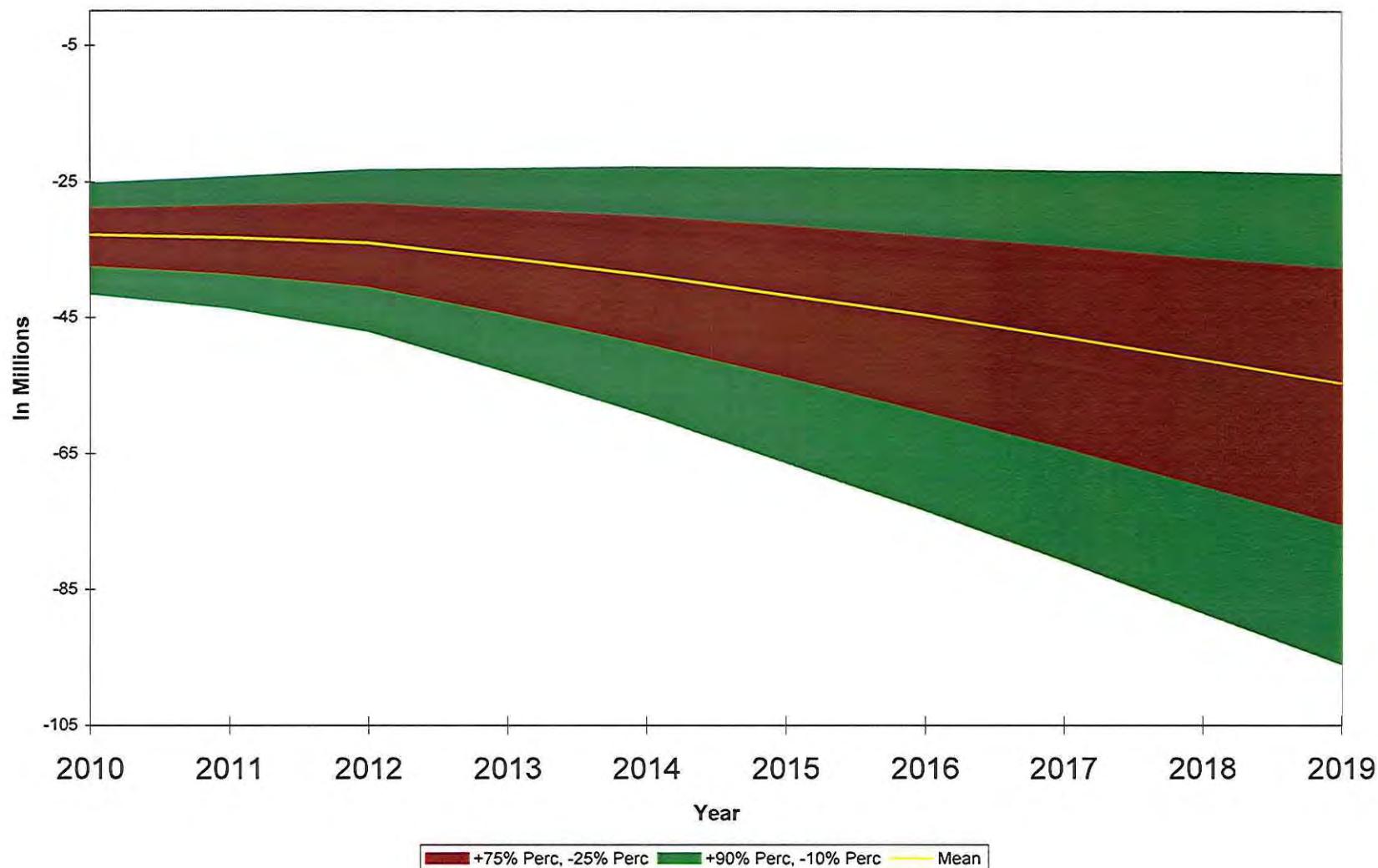
MISSOURI PETROLEUM STORAGE TANK INSURANCE FUND  
AST REMEDIAL  
ADJUSTED TRENDED ULTIMATE LOSSES

Accident	ULTIMATE	ULT	Selected	
			TREND	ADJ
1995	1	133,105	1.000	133,105
1996	1	81,528	1.000	81,528
1997	0	0	1.000	0
1998	8	104,808	1.000	104,808
1999	9	180,070	1.000	180,070
2000	20	250,735	1.000	250,735
2001	16	98,909	1.000	98,909
2002	3	190,753	1.000	190,753
2003	4	130,653	1.000	130,653
2004	3	319,204	1.000	319,204
2005	1	85,105	1.000	85,105
2006	0	0	1.000	0
2007	2	68,189	1.000	68,189
2008	2	74,422	1.000	74,422
2009	1	300,768	1.000	300,768
AVERAGE	4.9			169,449
SELECTED	1.0			125,000

## Range of Fund Balances over Time



## Range of Fund Equity Over Time



MISSOURI PETROLEUM STORAGE TANK INSURANCE FUND  
LARGE CLAIM LOSS ANALYSIS

Accident Year	Counts	Over \$250,000		Under \$250,000		Percentages over \$250,000	
		Reported Losses	Counts	Reported Losses	Counts	Reported Losses	Counts
1991	0	\$0		1	\$174,218	0%	0%
1992	0	\$0		0	\$0		
1993	0	\$0		9	\$537,418	0%	0%
1994	1	\$266,955		41	\$3,344,951	2%	7%
1995	4	\$1,344,326		33	\$2,335,982	11%	37%
1996	60	\$25,373,876		499	\$40,121,366	11%	39%
1997	13	\$6,237,468		153	\$10,071,656	8%	38%
1998	18	\$10,030,194		235	\$14,835,718	7%	40%
1999	24	\$12,086,628		203	\$11,589,644	11%	51%
2000	29	\$13,933,751		247	\$16,758,614	11%	45%
2001	7	\$2,988,448		144	\$9,072,827	5%	25%
2002	10	\$4,660,269		133	\$7,214,224	7%	39%
2003	3	\$1,294,367		126	\$8,562,312	2%	13%
2004	7	\$3,032,484		120	\$7,314,784	6%	29%
2005	4	\$2,589,645		98	\$6,375,377	4%	29%
2006	2	\$1,010,842		66	\$3,360,851	3%	23%
2007	5	\$2,710,744		103	\$5,470,363	5%	33%
2008	3	\$1,781,000		83	\$5,161,443	3%	26%
2009	0	\$0		91	\$4,751,808	0%	0%
	185	\$87,729,715		2,301	\$150,660,990	7%	37%

**Extended Reporting Provisions**  
**Extended Reporting Experience**

Group	Loss Year	Reported	Ultimate	Developed Losses
AST - Insurance	2003	191,781	1.47	282,459
AST - Insurance	2004	50,001	1.52	75,805
AST - Insurance	2005	60,151	1.56	93,973
AST - Insurance	2007	-	1.68	-
AST - Insurance	2008	50,001	1.73	86,489
UST - Insurance - Closure	2003	73,752	1.24	91,374
UST - Insurance - Closure	2004	50,001	1.27	63,562
UST - Insurance - Closure	2005	702,969	1.30	911,393
UST - Insurance - Closure	2006	264,522	1.39	366,593
UST - Insurance - Closure	2007	458,822	1.48	676,927
UST - Insurance - Closure	2008	301,005	1.60	481,708
UST - Insurance - Closure	2009	130,002	1.69	220,024
UST - Insurance - Other	2005	60,000	1.49	89,573
UST - Insurance - Other	2006	108,792	1.59	172,540
UST - Insurance - Other	2007	50,000	1.73	86,564
UST - Insurance - Other	2008	81,121	1.87	151,721
UST - Insurance - Other	2009	923,006	2.11	1,951,630
UST - Insurance - Release	2008	141,699	1.84	260,352
		3,697,625		6,062,686
		Earned Premium	Loss Ratio	
		236,654	2562%	

**MISSOURI PETROLEUM STORAGE TANK INSURANCE FUND  
IMPACT OF FINANCIAL RESPONSIBILITY FOR ASTS**

Current Market Penetration	35.0%
Market Penetration at 12/31/2010	60.0%
Market Penetration at 12/31/2011	82.5%
In-Force Current	567
In-Force at 12/31/2010	972
In-Force at 12/31/2011	1,337
Participation Fees Current	\$234,464
Participation Fees at 12/31/2010	\$401,939
Participation Fees at 12/31/2011	\$552,666
Initial Tank Fees Current	\$28,161
Initial Tank Fees at 12/31/2010	\$68,661
Initial Tank Fees at 12/31/2011	\$105,111
FY Frequency Currently	8.7
FY 2011 Frequency	11.8
FY 2012 Frequency	14.0
FY 2013 - 2019 Frequency	20.4

MISSOURI PETROLEUM STORAGE TANK INSURANCE FUND  
ADJUSTMENT OF LATEST YEARS RESULTS FOR ACTUAL EXPERIENCE

Annual Revenues	Projected FY 2010	Actual - through Nov 2009	FY 2010 Revised Projection
Transport Load Fees	\$11,750,000	\$4,928,346	\$11,782,513
\$100 Initial tank fees	\$28,161	\$7,975	\$24,402
UST Participation Fees	\$1,025,994	\$348,941	\$947,438
AST Participation Fees	\$234,464	\$89,188	\$225,959
Interest Income	\$2,164,710	\$468,897	\$1,731,645
<b>Total Revenues</b>	<b>\$15,203,330</b>	<b>\$5,843,347</b>	<b>\$14,711,956</b>
<b>Claim Payments:</b>			
UST Insurance Claims - Release	\$1,187,713	\$421,090	\$1,113,923
UST Insurance Claims - Other	\$2,416,370	\$856,696	\$2,266,245
UST Insurance Claims - Closure	\$3,701,339	\$1,312,267	\$3,471,381
UST Remedial Claims	\$6,176,721	\$2,189,885	\$5,792,972
AST Insurance Claims	\$1,828,210	\$765,184	\$1,831,640
AST Remedial Claims	\$490,317	\$205,219	\$491,237
Subrogation	<b>(\$268,611)</b>	<b>(\$153,832)</b>	<b>(\$310,522)</b>
<b>Total Claim Payments</b>	<b>\$15,532,058</b>	<b>\$5,596,508</b>	<b>\$14,656,875</b>
Total UST	\$13,482,143	\$4,779,937	\$12,644,520
Total AST	\$2,318,527	\$970,403	\$2,322,877